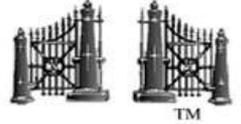




Agenda for 19 June 2013 Picatinny Arsenal Restoration Advisory Board

US Army Garrison



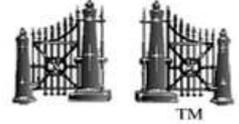
Picatinny Arsenal

- **Attendance, Introductions & Correspondence**
- **Old Business**
- **TAPP Contract Financial Report and Path Ahead**
- **600 Hill Feasibility Study Addendum**
- **PICA 111 Sites**
- **Update in a Minute**
- **Synopsis and Next Meeting**



TAPP Financial Report Update

US Army Garrison



Picatinny Arsenal

- **FY 12 Picatinny Contract** : Contract awarded September 2011 with 2 Option Years via Purchase Order; 1st Option Year exercised.

De-obligated \$4,185.35

Contract Value	\$18,227.81
Spent to Date	\$18,227.81

- **FY 13 Picatinny Contract Option Year 1: Good to SEP 13:**

Purchase Order Value	\$23,218.50
Spent to Date	\$ 4,199.90
Remaining	\$19,018.60

- **FY 13/14 Picatinny Contract Option Year 2 to be decided at this meeting:**
 1. Is continuation of TAPP necessary?
 2. Should Subsurface contract be renewed?

This last option year of the contract is the last year of the 2nd Waiver Request.

- **TAPP Reviews:**

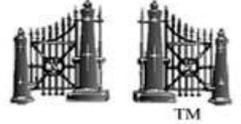
Method of selecting what TAPP reviews done by Doodle polls with a minimum of two votes in favor needed for a review. Continue to send executive summaries, report or reports summaries prior to the Doodle vote.

Recent reviews: 600 Hill FS Addendum; 6 Annual Reports for Area Groundwater

Suggested upcoming reviews: MMRP RI Report; Marsh (SI) Report; New 26 Site Proposed Plan; PICA 111 Proposed Plan, 26 Site Proposed Plan, 45 Site Feasibility Study, Revised 5 Site FS.



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Picatinny Arsenal

PICA-058 (600 Area Groundwater) Source Area Investigation/Feasibility Study Update 19 June 2013

Douglas Schicho, PE PMP
CB&I Federal Services (formerly Shaw E&I)



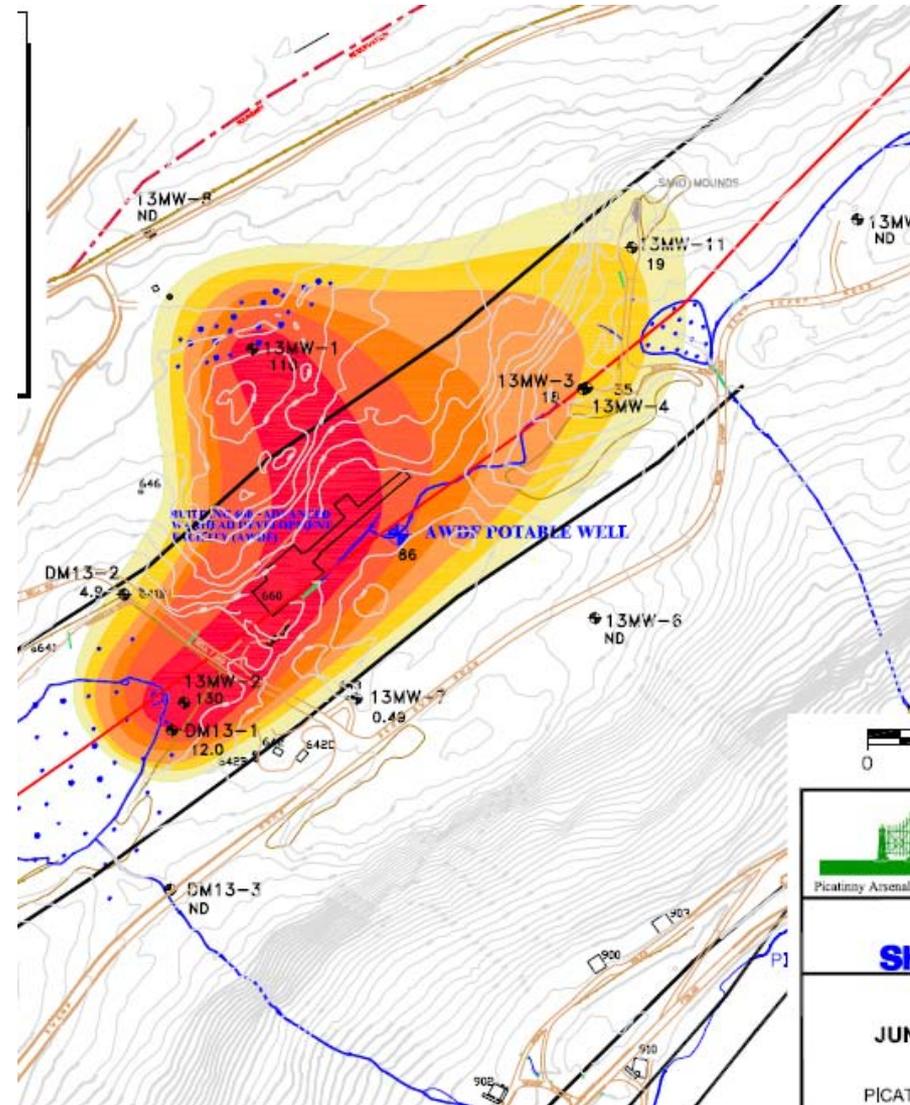
Presentation Overview and Goals

- Update PAERAB on:
 - Project progress
 - Results of source area investigation
 - Feasibility Study modifications
- Discuss results of new investigation and path forward
- Discuss remedial alternatives

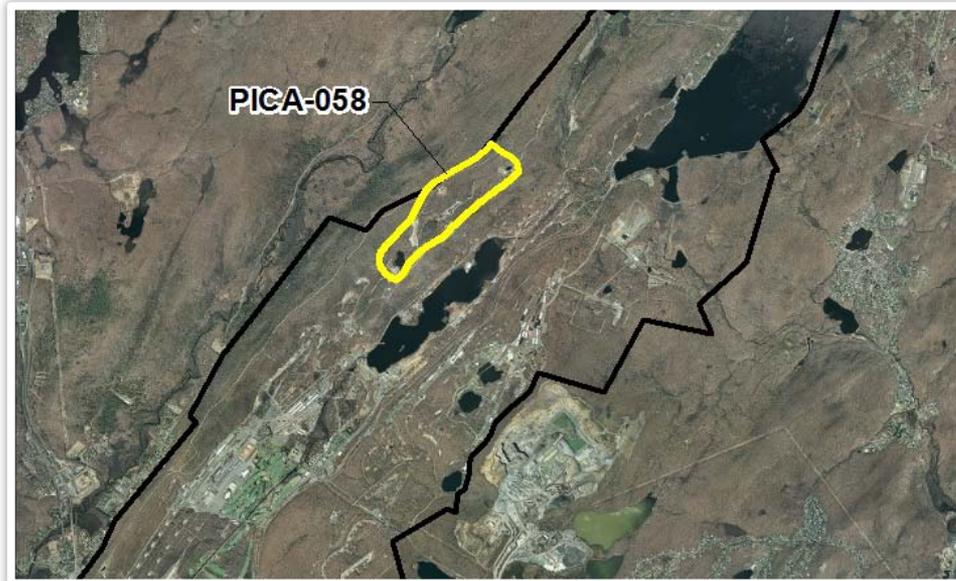


PICA-058 Background

- TCE detected in initial testing of potable well installed for Building 660 in the mid 1990s.
- No exposure to people: Building 660 was constructed with a treatment system and supplied with bottled water for drinking
- AWDF Well has since been taken off-line and Building 660 connected to the Picatinny potable water system
- RI conducted between 2006 and 2009
- FS finalized and approved in 2010
 - Preferred Alternative was GW-2: Long Term Monitoring with Institutional Controls
- Proposed Plan submitted to regulators
- Proposed Plan never issued for public comment or finalized due to USEPA comments
- Additional Investigation done in 2011 and 2012
 - Source Area Investigation
 - Vapor Intrusion Investigation
 - Groundwater and Surface Water Sampling

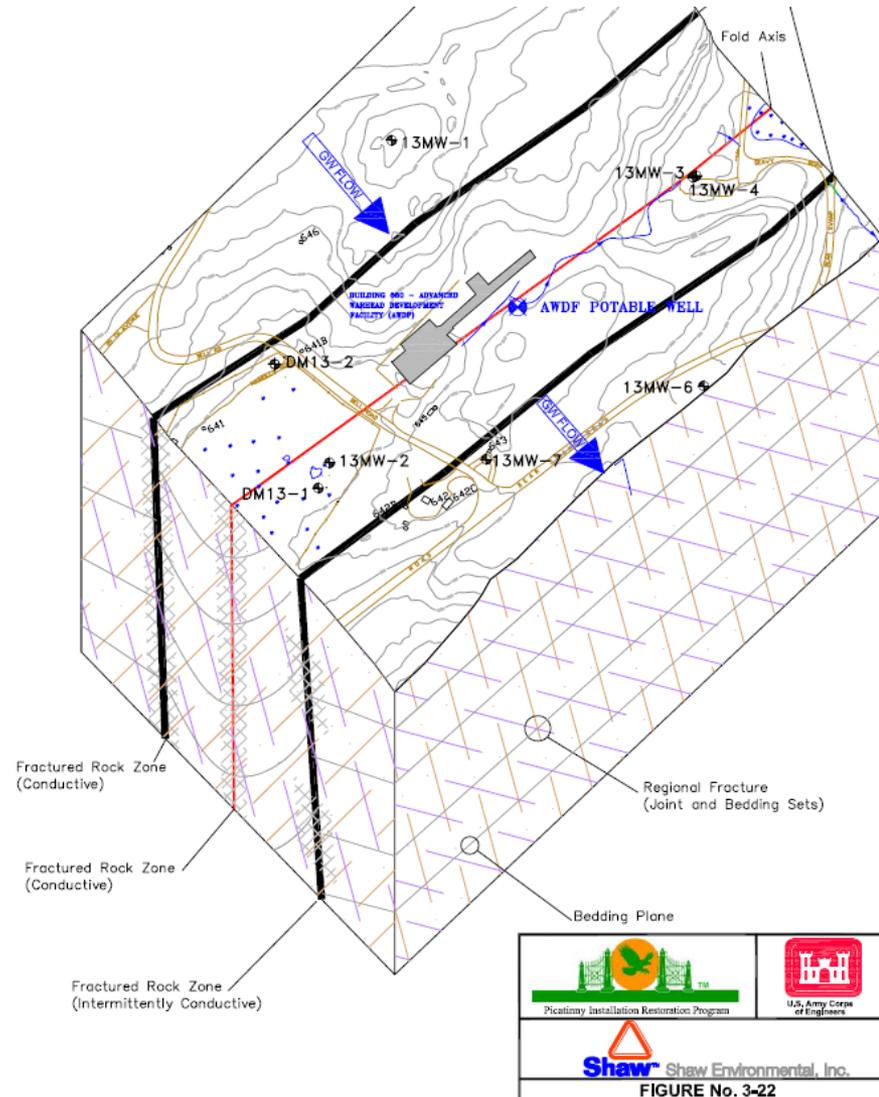


600 Area Groundwater Site Location Map



Remedial Investigation

- Plume was investigated from the potable well outward
- Wells were installed for delineation and at multiple potential source areas
- VLF geophysical survey
- Down hole geophysics
- Packer testing
- Down hole video
- Pump test
- Multiple rounds of ground water sampling
- Multiple rounds of surface water sampling
- FS approved in 2010 by USEPA and NJDEP



TCE in Groundwater Isopleth Map

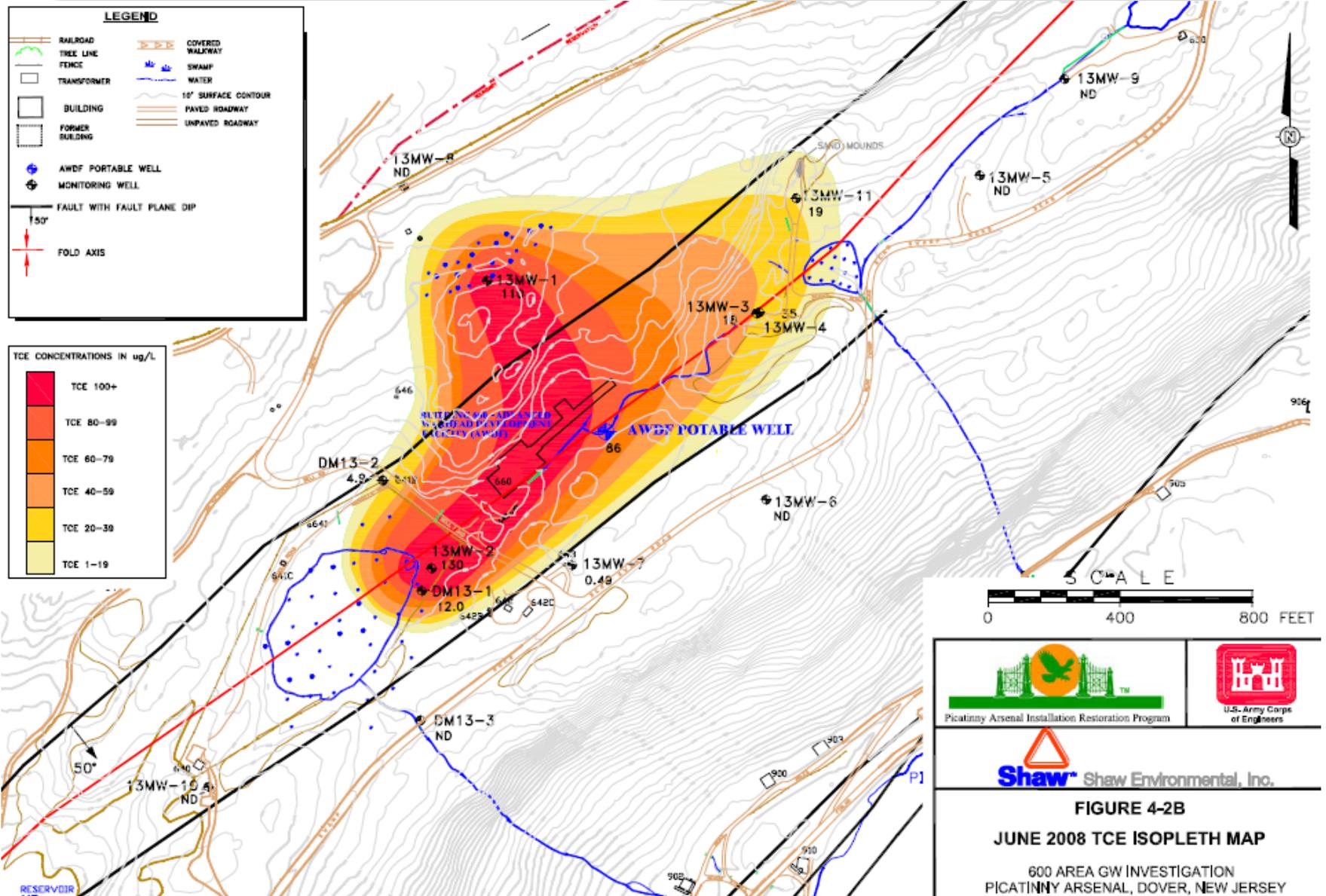


FIGURE 4-2B
JUNE 2008 TCE ISOPLETH MAP
 600 AREA GW INVESTIGATION
 PICATINNY ARSENAL, DOVER, NEW JERSEY

USEPA Comment to Proposed Plan (2010)

- EPA Comment
 - The potential for vapor intrusion has not been investigated
 - The presumed source area has not been investigated due to blasted rock
 - 60 years is an excessive time period for passive remediation
 - Request that the preferred alternative be changed to source removal
- Army agreed to perform Source Investigation and revise FS, PP, and ROD if necessary based on the results

PICA-058 Source Area

- Greatest TCE concentration was observed at 13MW-1 adjacent to the 656 test range (originally IRP Site 12).

- Building 656 test range was constructed between 1957 and 1963. Munitions testing operations took place from 1963 until the late 1980's.
 - Disposal of fill was first observed in 1970 aerial photographs, additional fill was noted in 1974 photograph. A site reconnaissance in 1996 observed construction debris, drum debris, and a buried truck within the 1970s fill.

 - Large amounts of blasted rock from Building 660 construction site was deposited over the 1970s fill in the late 1990's.

 - Blasted rock was subsequently removed (2010-2011).

Site 12 Aerial Photo Timeline – Active Range



1963



1970



1979



1987

Site 12 Aerial Photo Timeline - Rock Fill Site



2002



2007

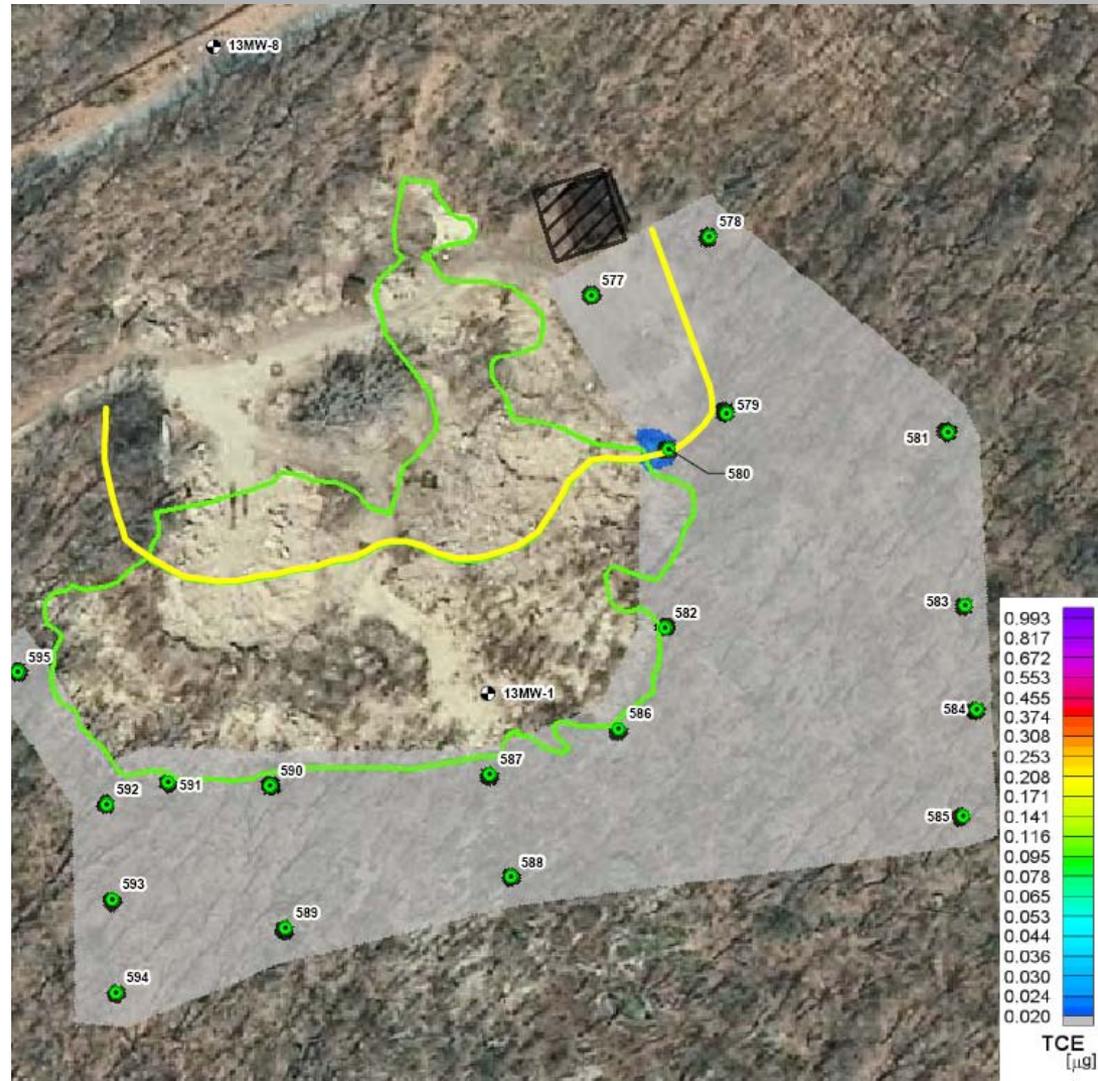


Extent of 1970s fill

Extent of 1990s fill

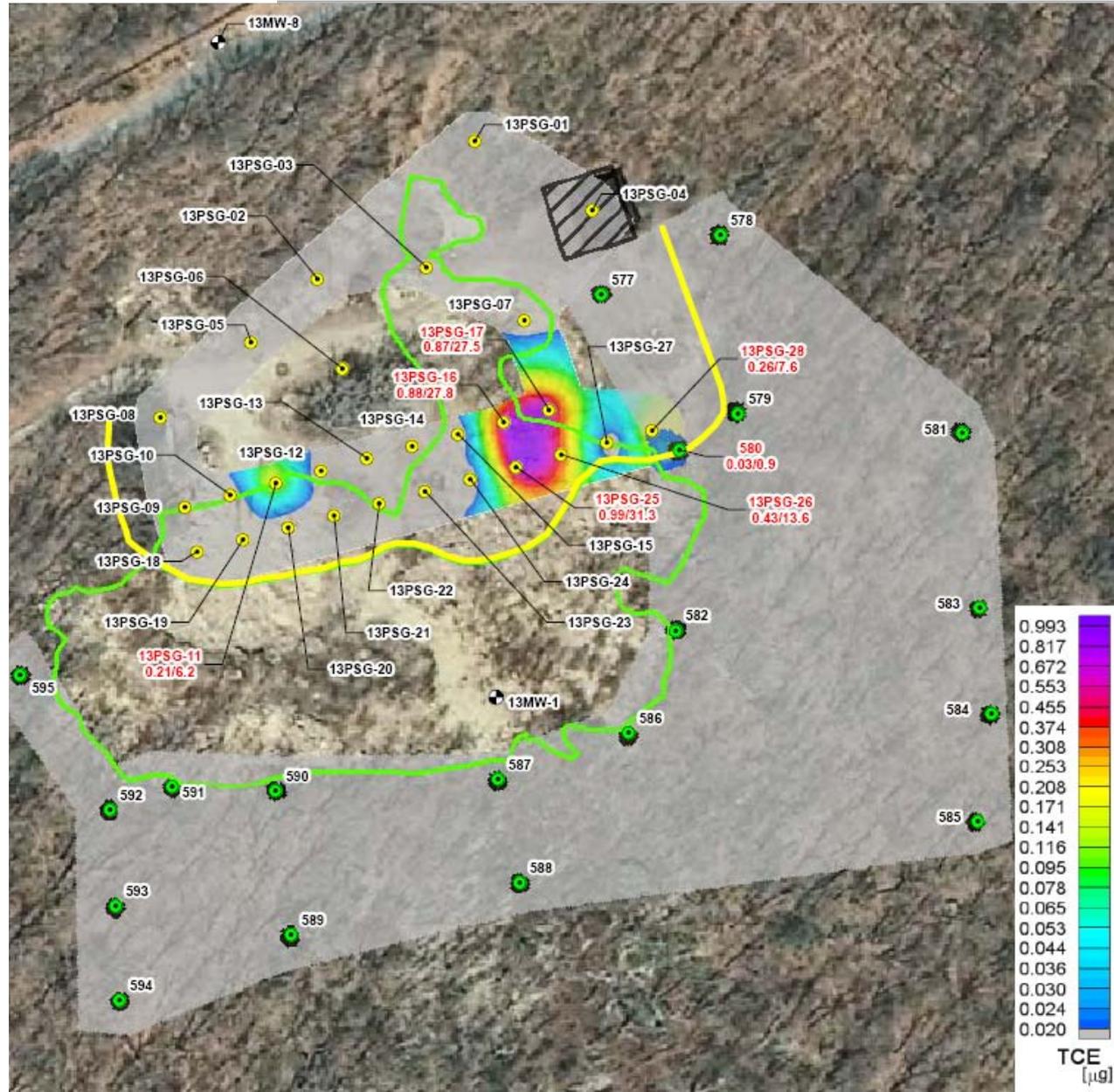
Soil Gas Module Results 2004

- Modules installed ringing the crushed rock which was placed there in the 1990s and not yet removed.



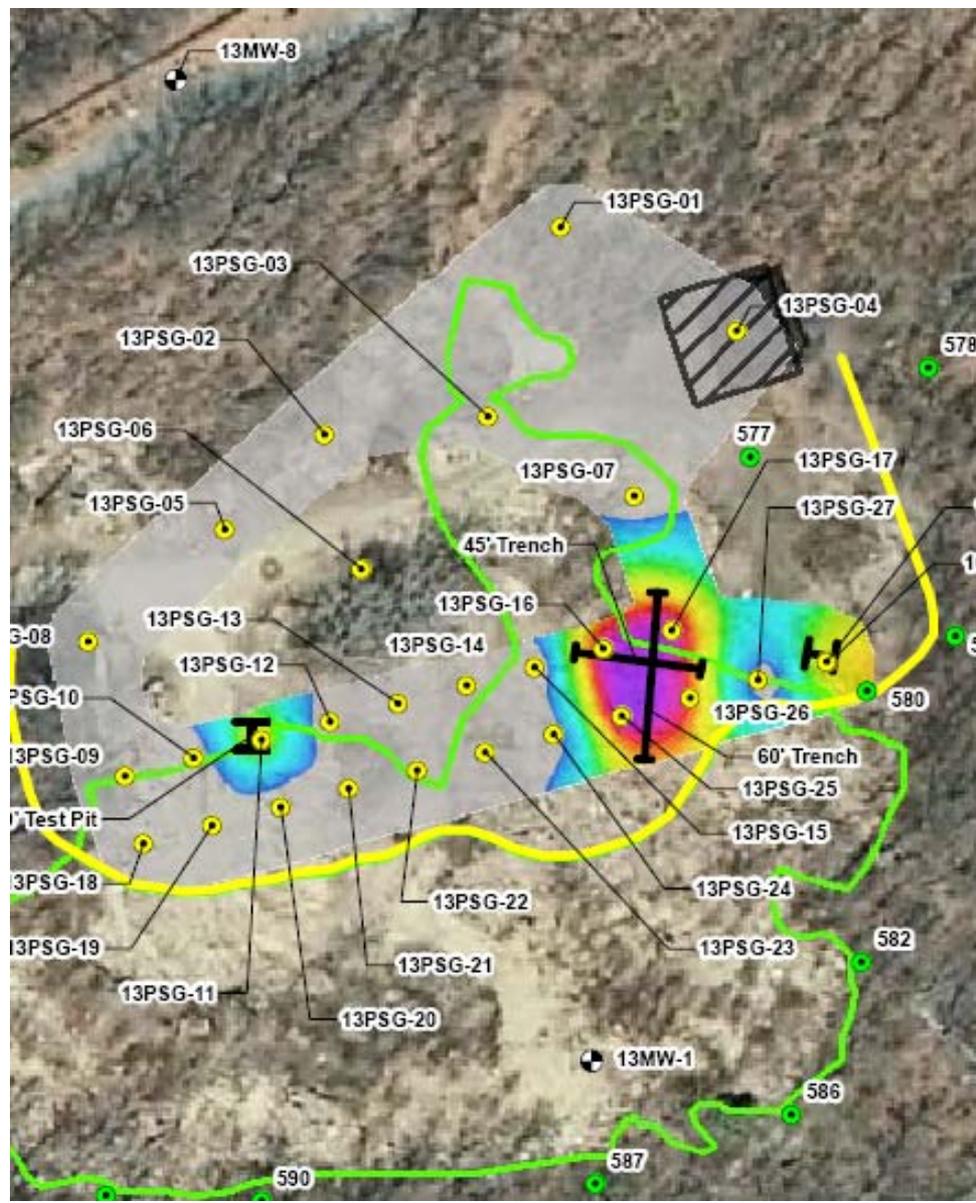
Soil Gas Module Results 2011

- Modules were installed within the 1970s fill area which had been recently uncovered by construction crews
- New data showed TCE in two areas within the 1970s fill
- No other contaminants of note were detected



Source Area Investigation Approach

- Agreed upon approach included two test pits, one 45 foot trench and one 60 foot trench.
- 13 soil samples for VOCs
- 7 analyzed for SVOCs, metals, and explosives
- Additional samples collected from the trenches by Weston – (MMRP contractor)



Source Area Investigation 2011 (Shaw)

- Test Pit Investigation began in June 2011
- Two Test Pits and the beginning of one trench were completed
 - Test pit #1 contained no MD but did contain metallic debris including cars from the 1950s
 - Test pit #2 contained MD (Law Rocket Tubes)
 - 45 Foot trench encountered a munitions disposal pit and crushed drums
- Discovery of MEC item (gravel mine canister) changed the site from anticipated low probability of MEC to high probability.
- Investigation was no longer possible under construction support. Work was stopped before achieving objectives

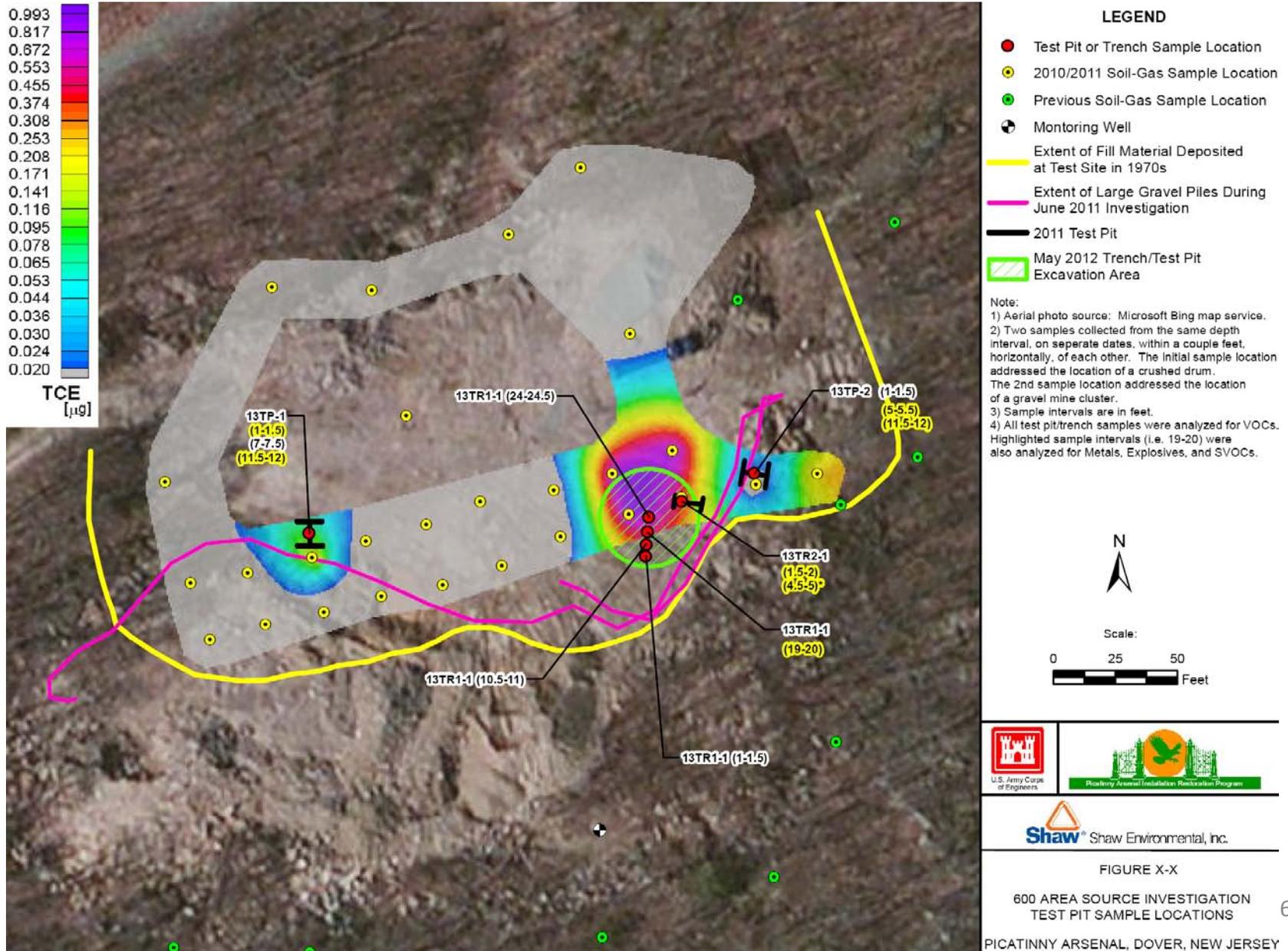


Source Area investigation 2012

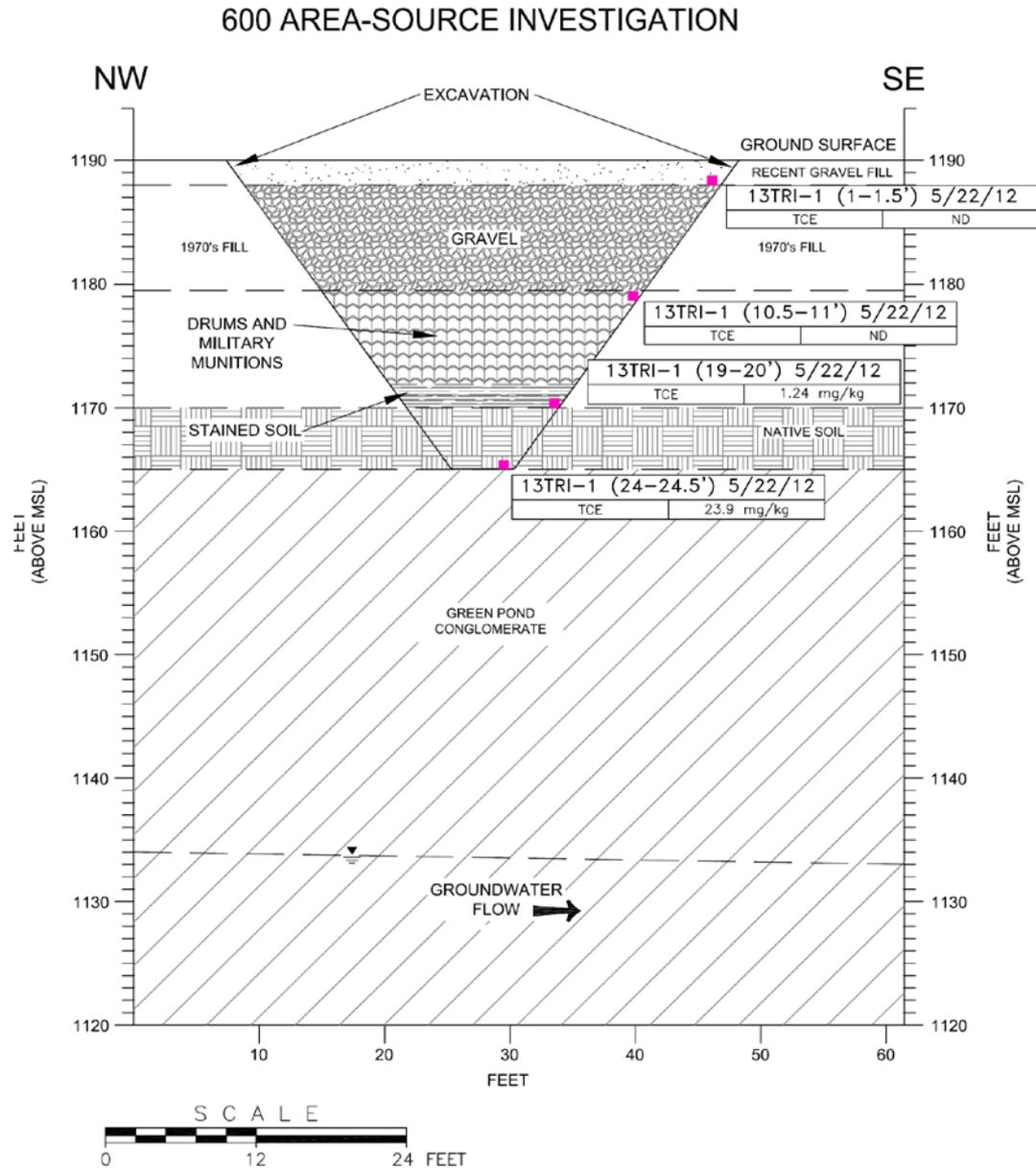


- USACE drafted ESS enabled the project to proceed
- Roughly half of the 60-foot trench completed
- Depth to bedrock was ascertained (24.5 feet)
 - 0-2 feet recent fill
 - 2-10 feet older fill (loose gravel)
 - 10-20 feet crushed drums, MD, metal debris
 - 18-20 feet stained soil low-level PID hits
 - 20-24.5 feet PID hits ranging from 700-1,000 ppm little to no gravel or debris
- Soil Sampling
 - TCE detected in two samples (only one other minor SVOC exceedance)
 - 1.24 mg/kg at 19-20 ft bgs
 - 23.9 mg/kg at 24-24.5 ft bgs
- Sampling Objectives
 - Determined depth to bedrock
 - Determined the presence of a TCE source area
 - Did not determine extent so assumptions were made in the updated FS

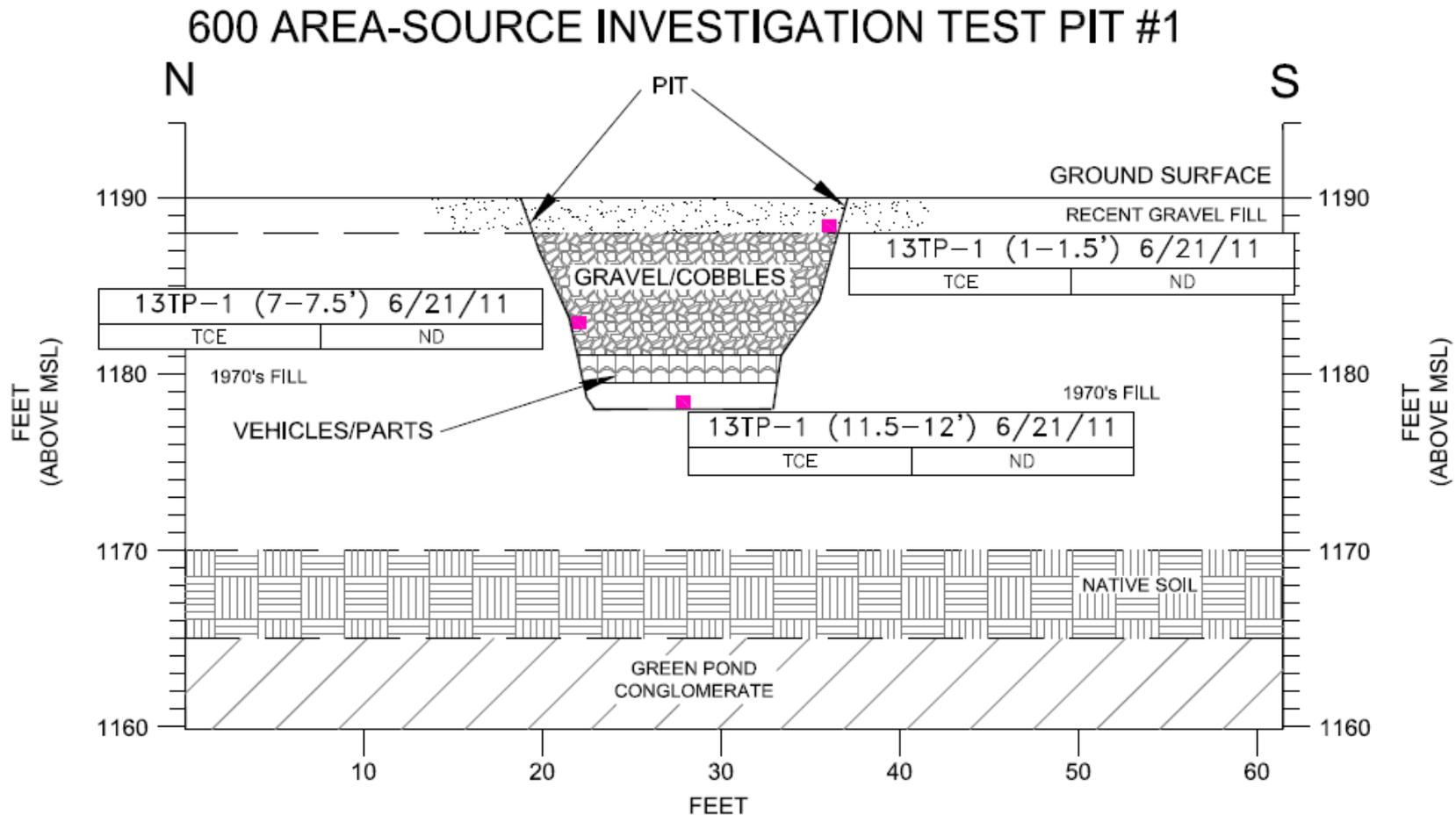
Soil Sampling Locations Horizontal



Trench 1 Soil Sampling Locations Vertical



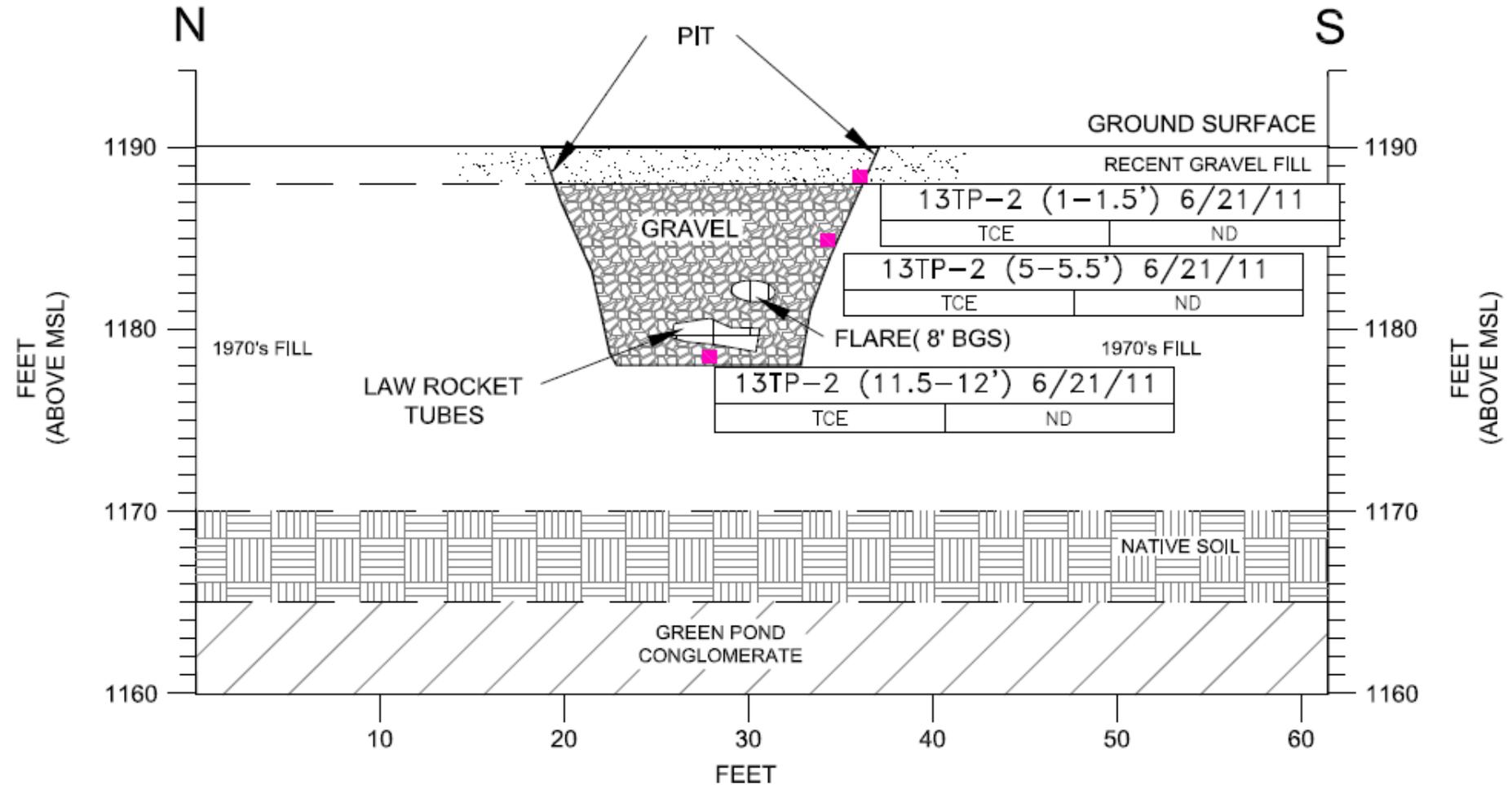
Test Pit 1 Soil Sampling Locations Vertical



Test Pit 2 Soil Sampling Locations - Vertical

FEET

600 AREA-SOURCE INVESTIGATION TEST PIT #2



Soil Analysis Results

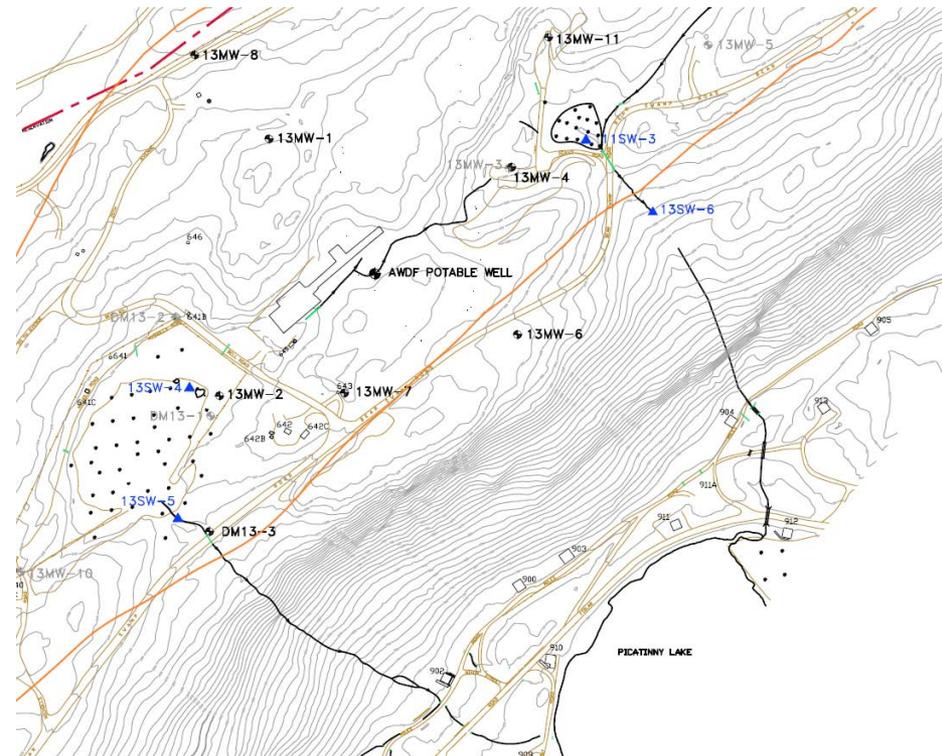
- TCE exceeded impact to groundwater screening levels in 2 of 13 samples at 1.24 mg/kg and 23.9 mg/kg
 - Both detections were in the deeper interval of trench 2
- An additional 7 samples collected for SVOCs, metals and explosives.
 - There was only one exceedance of Benzo(a)pyrene slightly above the NJDEP remediation standards
 - Exceedance was in the 1.5 - 2 foot bgs sampling interval of test pit #1
 - All other analyses were below criteria

Revised Feasibility Study 2013

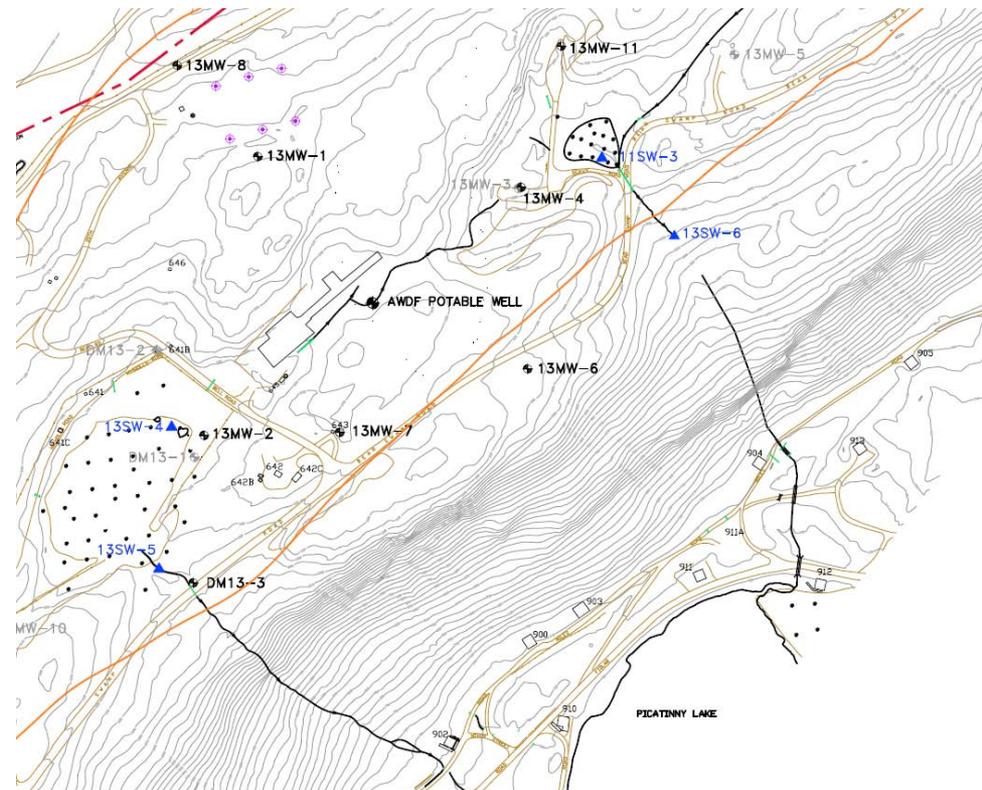
- FS was formerly approved once by USEPA and NJDEP in 2010
- New Data generally agrees with assumptions included in FS (i.e. horizontal extent)
- One additional remedial alternative was added. Remedial alternatives will now include ICs due to MEC. New simulations were run to estimate groundwater remediation timeframes.
 - GW-1 – No Action
 - ~~– GW-2 – Long Term Monitoring and other Institutional Controls~~
 - GW-2~~3~~ – Monitored Natural Attenuation and Institutional Controls (revised timeframe)
 - GW-3~~4~~ – In Situ Chemical Oxidation and MNA Polishing and ICs
 - GW-4~~5~~ – In Situ Enhanced Anaerobic Bioremediation, MNA Polishing and ICs
 - GW-5~~6~~ – TCE Source Material Excavation and MNA with ICs
 - GW-6~~7~~ – Total Landfill Removal (new remedial alternative)

Description of Remedial Alternatives

Alternative #2 - Monitored Natural Attenuation



Alternatives #3 and #4 – Groundwater Treatment



Description of Alternatives (cont.)

Alternative #5 – Source Material Excavation



Alternative #6 – Total Landfill Removal



Feasibility Study Results

Alternative	Description	Capital Cost	Discounted O&M	Total Present Worth	Duration
Groundwater					
GW-1	NO ACTION	\$0.00	\$0.00	\$0.00	Not Applicable
GW-2	MONITORED NATURAL ATTENUATION (MNA) WITH INSTITUTIONAL CONTROLS	\$60,000.00	\$620,235.73	\$680,235.73	50 years
GW-3	IN SITU CHEMICAL OXIDATION (ISCO) AND MNA WITH ICs	\$427,660.51	\$653,834.50	\$1,081,495.01	50 years
GW-4	IN SITU ENHANCED ANAEROBIC BIOREMEDIATION AND MNA WITH ICs	\$469,863.67	\$733,201.14	\$1,203,064.81	50 years
GW-5	TCE SOURCE MATERIAL EXCAVATION AND MNA WITH ICs	\$1,411,844.81	\$249,834.17	\$1,661,678.98	10 years
GW-6	TOTAL LANDFILL REMOVAL AND MNA POLISHING WITH ICs	\$2,360,193.45	\$249,834.17	\$2,610,027.62	10 years

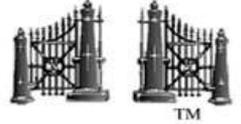
Next Step

- NJDEP and USEPA comments received and discussed at a meeting today.
- CB&I to complete Revised Final FS
- Contract for Remedy In Place to be awarded in FY14





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Picatinny Arsenal

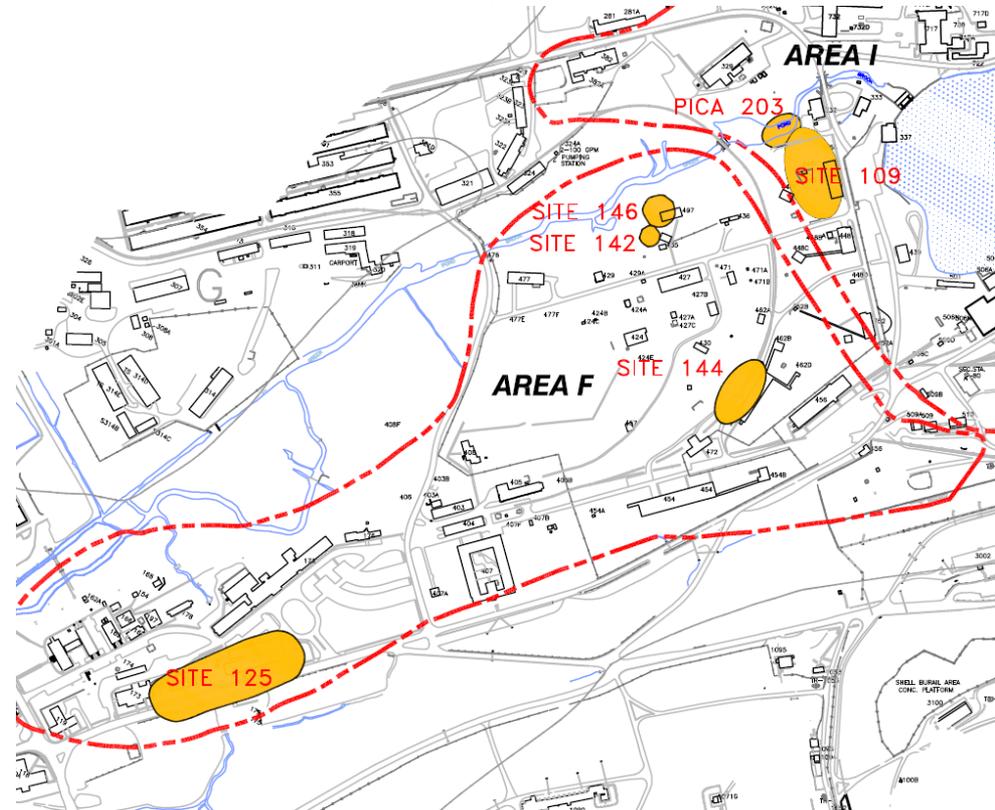
PICA-111 Decision Document Update 19 June 2013

Douglas Schicho, PE PMP
CB&I Federal Services (formerly Shaw E&I)



PICA-111 Background

- ▶ Six sites south of Picatinny Lake (Areas F and I). Grouping based upon site use and proximity to one another
 - Site 109 Former Buildings 445 and 445-D (Pyrotechnic Plant)
 - Site 125 Buildings 172 and 183 (Office Building and Lubricant Testing Building)
 - Site 142 Former Building 435 (Propellant Plant)
 - Site 144 Building 462 (Propellant Finishing)
 - Site 146 Former Building 497 (Powder Pressing Building)
 - PICA 203 Former Buildings 333 and 347 (Poison Gas Lab and Sample Handling House)



PICA-111 Decision Document Chronology

- February 2010 – Final FS submitted to regulators
 - Draft Final approved by NJDEP September 2009
 - Subsequent to submission (3/16/10) of the final document, USEPA Requests a pump and treat alternative for groundwater
- April 2010 – Final Revision #1 FS submitted
 - Included pump and treat alternative for information only
 - Approved by USEPA and NJDEP May 2010
- May 2010 - Draft Final Proposed Plan Submitted to Regulators
 - Comments received and responded to (January 2011)



Building 183



Building 462

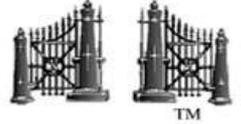
Current Status

- Draft Proposed Plan completed
- Draft Final to be submitted to regulatory agencies this month
- Recommendation consistent with recent Army/USEPA agreements
- Recommended alternative will be No Further Action with Monitoring of Land Use





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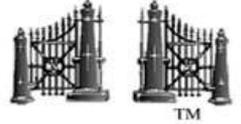
Picatinny Arsenal

Update-in-a-Minute Installation Restoration Program 19 June Presentation to the Picatinny Arsenal Restoration Advisory Board



Status of Installation Restoration Investigations

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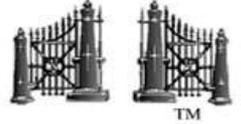
Picatinny Arsenal

- **Installation Restoration Program Remedial Investigations considered complete**
- **Last report for MidValley Groundwater Plume Vapor Intrusion Report approved**
- **Lake Picatinny sampling as required by NJDEP and EPA delayed until July**
- **Marsh Report Site Investigation submitted last week**



Status of IRP Feasibility Studies (FSs)

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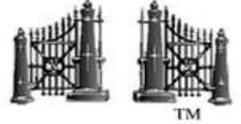
Picatinny Arsenal

- **600 Hill Groundwater** submitted in May, reviewed and discussed today
- **Lake FS:** Document will need to be revised (once again) based on sampling results
- **45 Site FS:** with all sites with acceptable risk to be submitted consistent with No Action by July; two alternatives – No Action and No Action with monitoring
- **Non-Lakes Sites:** with all sites with acceptable risk to be submitted consistent with No Action by July
- **5 Site FS:** Will be submitted in July – consistent with Army position on cleanup levels for chemicals of concern



Status of Proposed Plans

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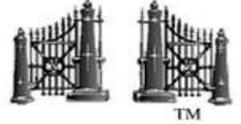
Picatinny Arsenal

- **600 Hill GW Proposed Plan: Will need to be separately contracted.**
- **PICA 111 NFA Proposed Plan: To be submitted in June; revision to be separately contracted.**
- **26 Site NFA Proposed Plan: Expect submittal in July**



Status of Records of Decision

US Army Garrison



Picatinny Arsenal

- **Signed RODs, Implemented:**

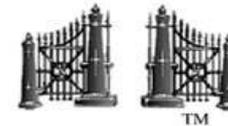
- Site 20/24 considered complete except LUC monitoring
- Post Farm: Action is considered complete except for monitoring
- Green Pond/ Bear Swamp Brook: Only monitoring remains
- Area D Groundwater: Permeable Reactive Barrier monitoring continues
- Site 25/26: ICs and vegetative cover considered complete
- Site 180 ROD: Complete except LTM
- Area E Groundwater: Consider complete except for the MNA monitoring
- 13 Sites Institutional ROD PICA 20: LUCs ongoing
- Site 61/104: considered complete
- Area B Groundwater: Considered *Remedy* in Place
- Site 31/101 DRMO Yard: Complete except for LUC
- Southern Boundary/Area C: LTM continues
- Group 1 GW and soils: Considered complete except monitoring
- Group 3 GW and surface water: Considered complete except monitoring
- Site 78, PICA 13 GW and SW: Considered complete except monitoring
- MidValley Groundwater: Remediation ongoing including planning excavation of RDX-contaminated soils

- **Next up**

- 26 Sites NFA Record of Decision: EPA to provide comments in July; expect signatures by end of FY

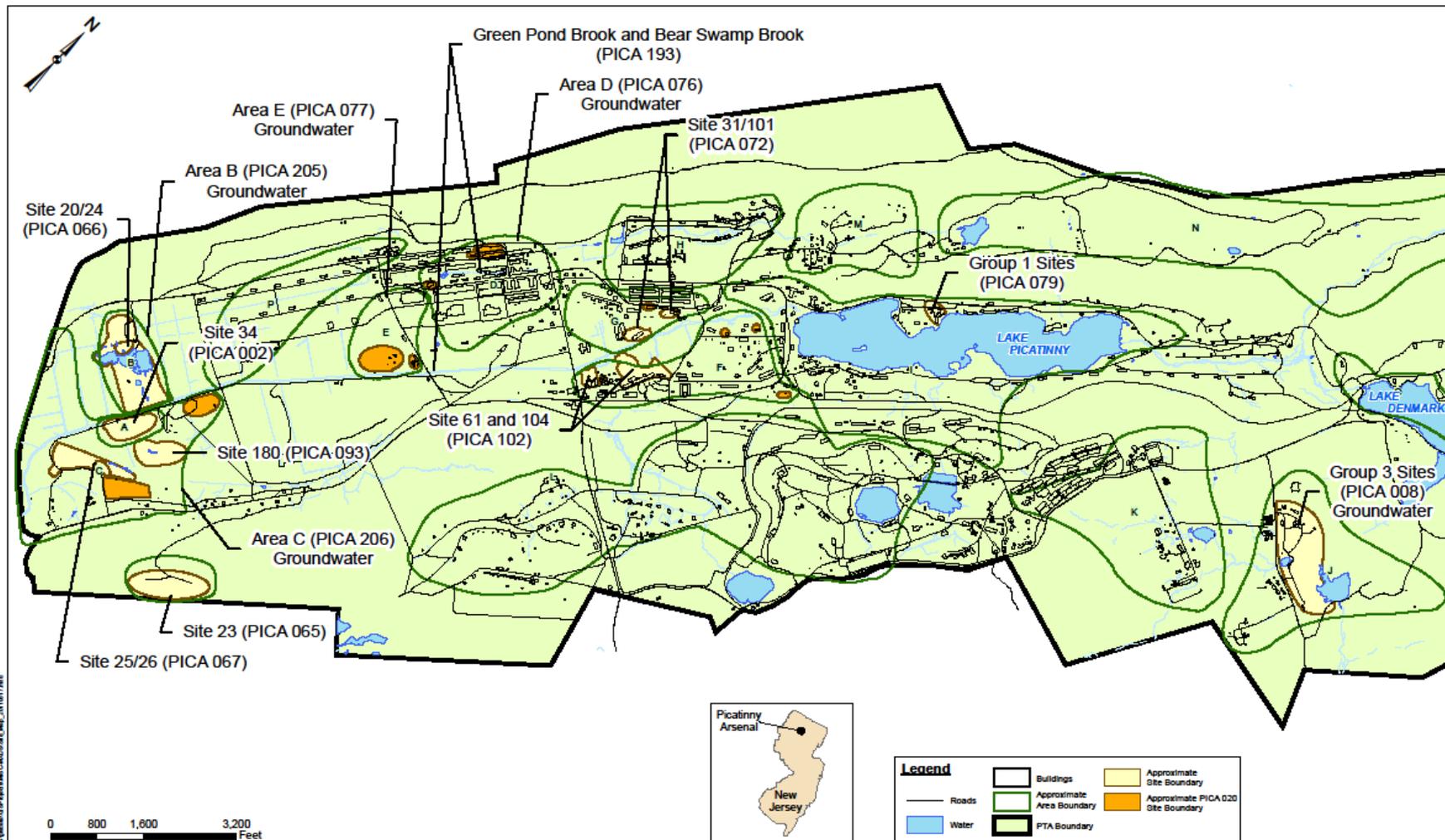
- **Signed and now being implemented**

- **Former Burning Grounds (PICA 02): Explanation of Differences required by EPA for Hybrid Cover; Contractual Modification required to be in compliance with C-1 Requirements.**



Sites with Signed Records of Decision

Picatinny Arsenal



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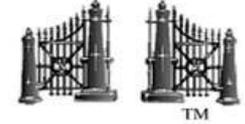
ARCADIS - Edison, NJ
131 Triennial Avenue, Suite 202, Edison, NJ 08817
Phone: (732) 225-5081 Fax: (732) 225-5082



REMEDIAL LOCATIONS PICATINNY ARSENAL, DOVER, NEW JERSEY

PROJECT MANAGER
Z. L. [unreadable]

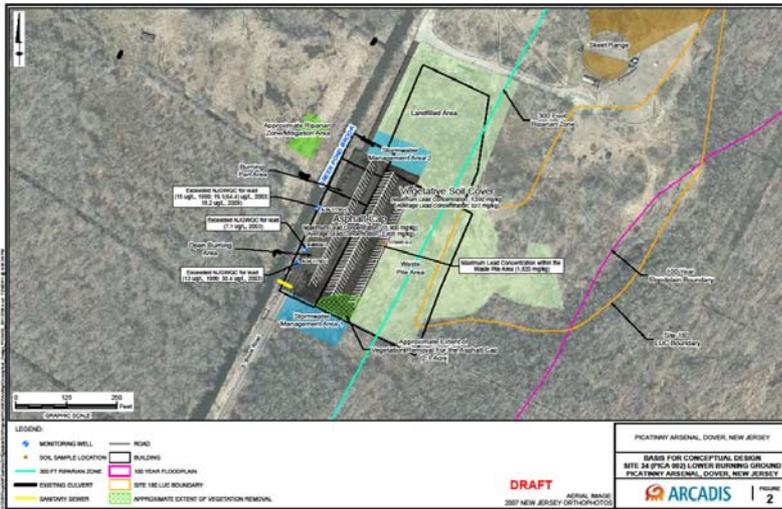
DEPARTMENT MANAGER
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Remedial Design and Current Remedial Action

Former Burning Ground (PICA 02) Remedial Design: Moving forward as of June

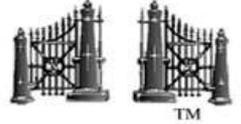
Sampling of RDX hotspot in MidValley completed in early June





Remedial Action Reports & Long Term Monitoring Reports

US Army Garrison



Picatinny Arsenal

- **MidValley Groundwater Interim Remedial Action Report**
- **Post Farm**
- **Site 180**
- **Site 25/26**
- **Area B GW**
- **Area E GW**
- **Area D GW**
- **Green Pond Brook/Bear Swamp Brook**
- **Site 104/61 Report**
- **Area C GW: NJDEP requesting offsite well, Army non-concurs**
- **Group 1 GW**
- **Group 3 GW**
- **PICA 13/Site 78 GW**
- **LUC Annual Certification**

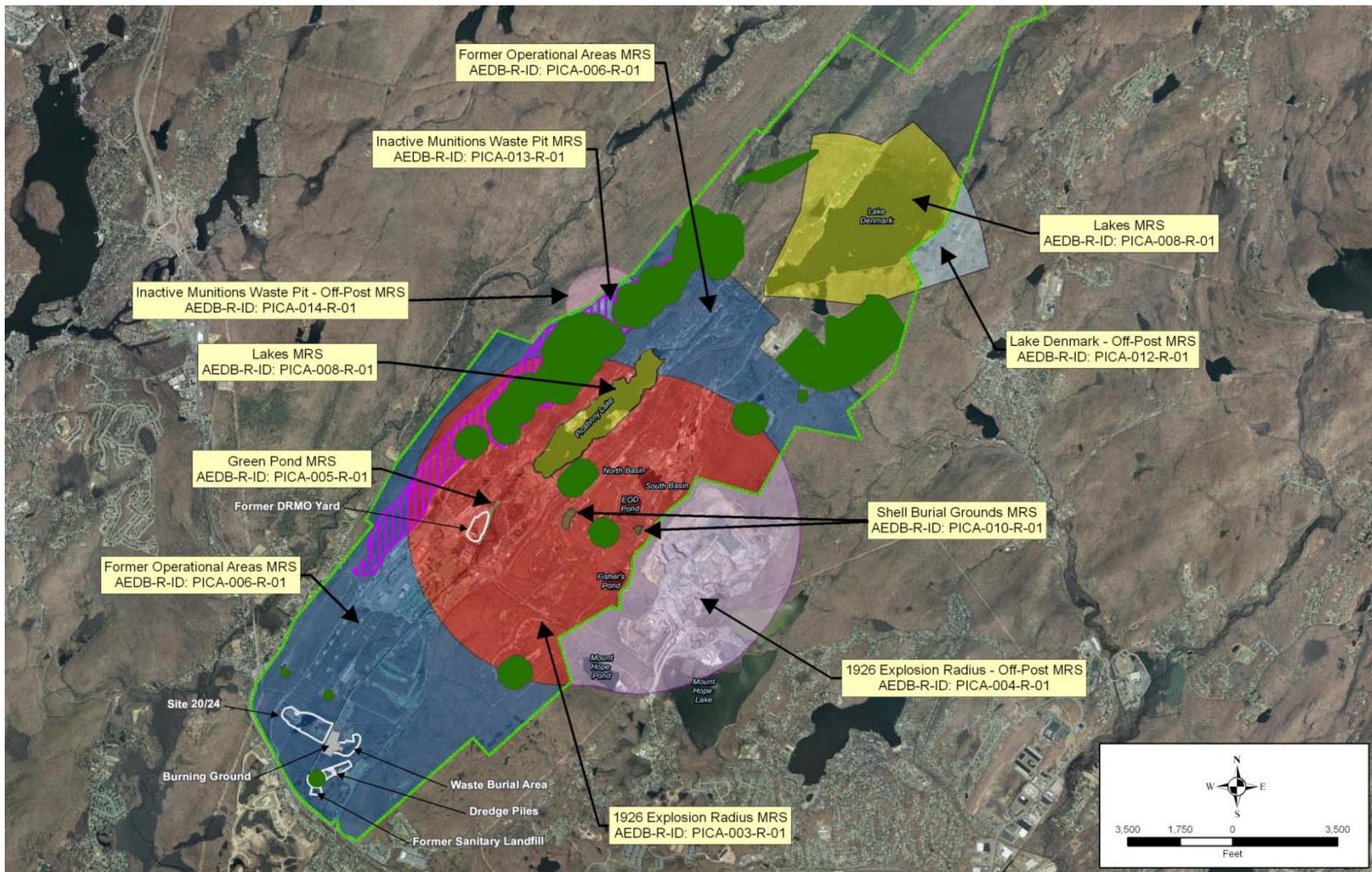


Military Munitions Response Program Remedial Investigation

US Army Garrison



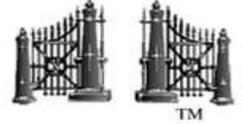
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Update on the Military Munitions Response Program Remedial Investigation

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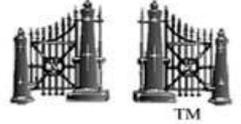
- RAB briefed on results in June 2012 on 8 Sites and March 2013 on the investigation of the Lakes
 - RI Report to be submitted in August of 2013
-

- Nine munitions response sites (MRS) totaling 5,801 acres
- RI Objective: Collect data to define nature and extent of munitions and explosives of concern (MEC) and munitions constituents (MC)
- Field investigations include geophysical surveys, anomaly excavations, and media sampling for MC
- Investigation results will be used to assess explosive hazards and risk to human health, safety, and the environment and evaluate MRS boundaries



June 2012 RAB Briefing

US Army Garrison

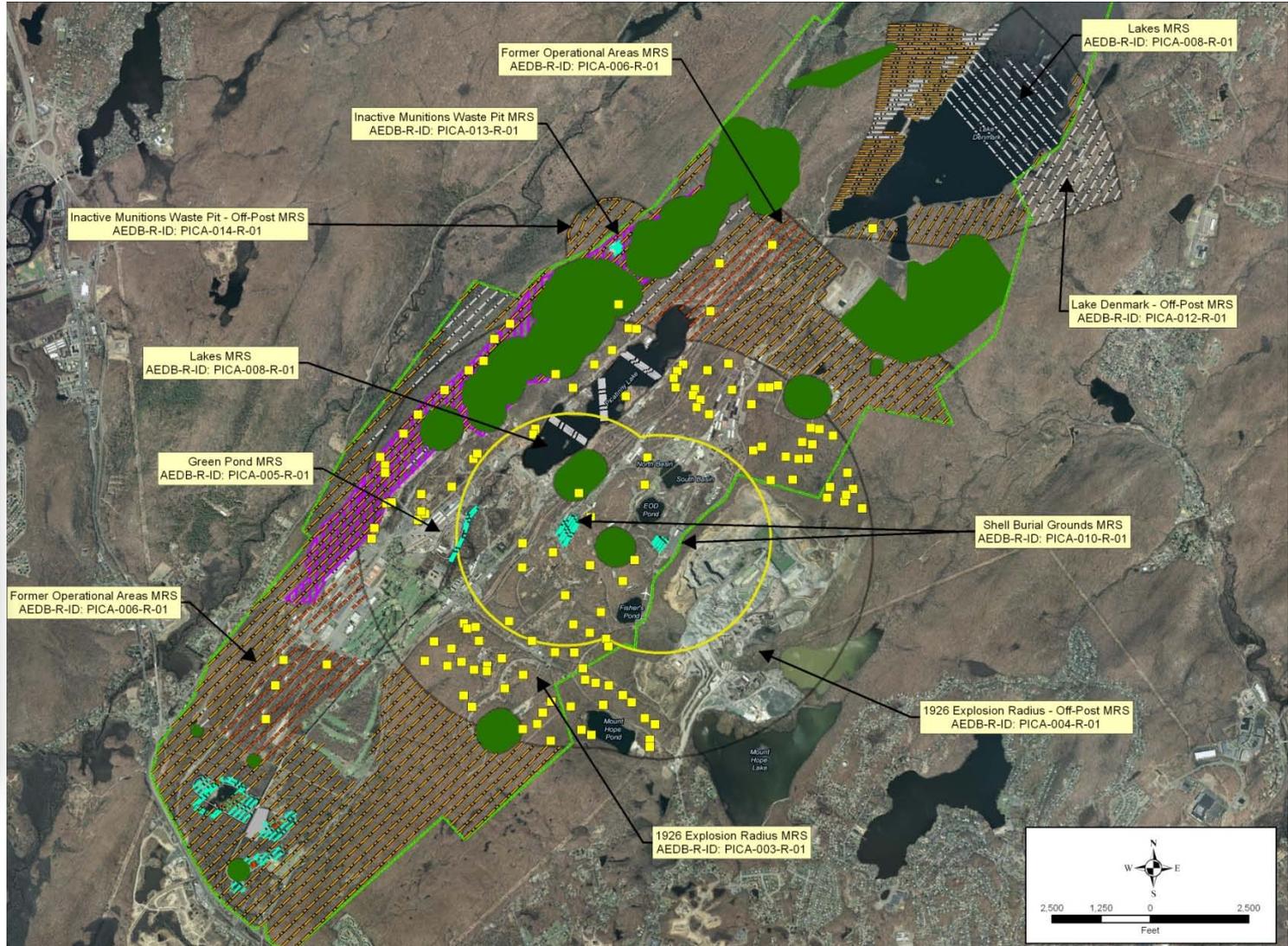


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Legend

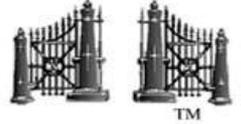
- Installation Boundary
- Operational Range Areas
- Military Response Sites
- Code 300 Area
- 0.5 Mile Radius
- Ineligible Area - Burning Ground
- MRS Sub-Sites
- Grids Investigated
- Planned Investigation Transects
- Transects Investigated
- EM 31 Transect Complete
- EM 61 Transect Complete





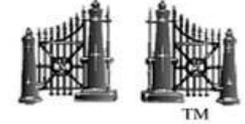
Update on the RI of Lake Denmark Off-Post MRS

US Army Garrison

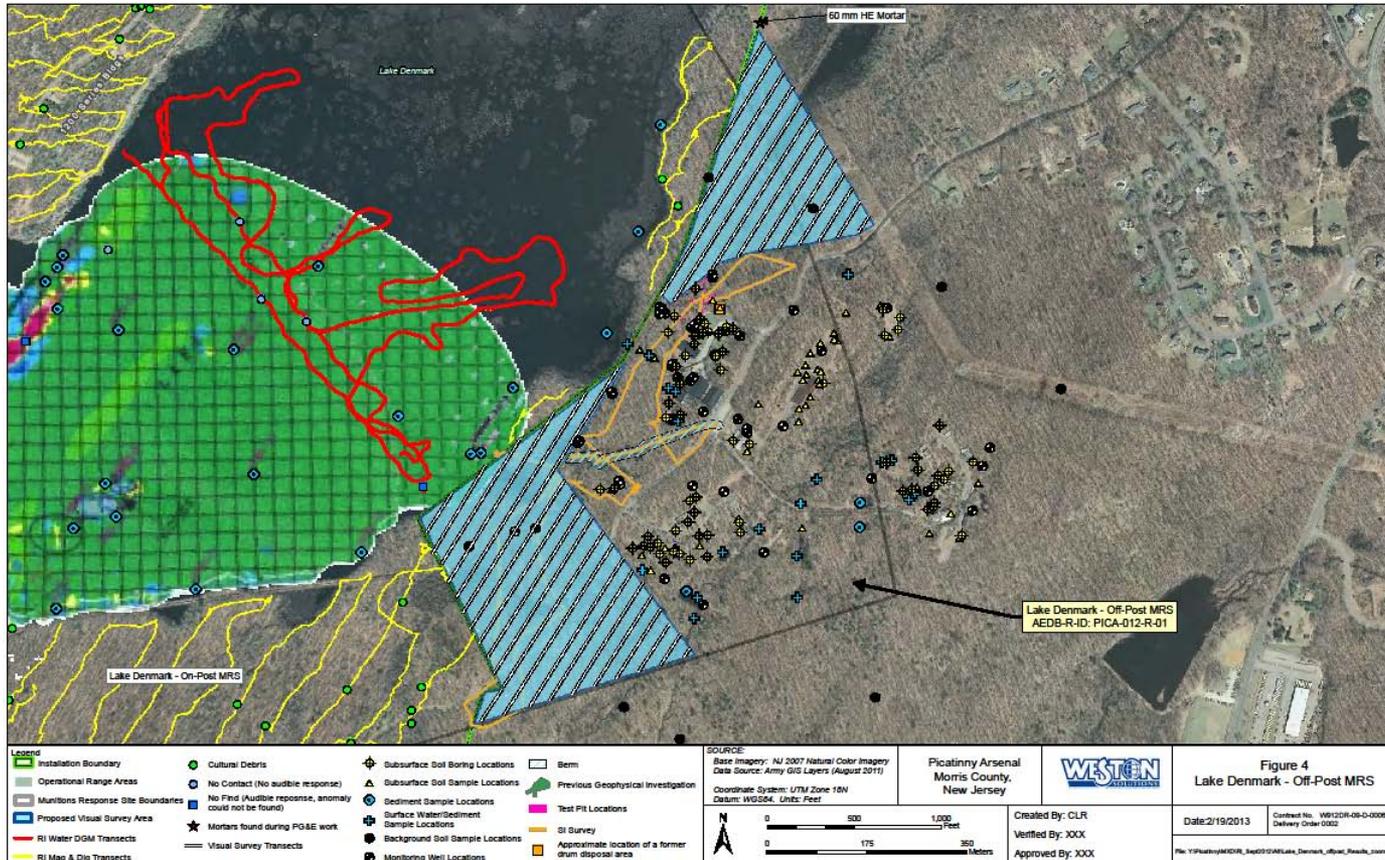


Picatinny Arsenal

- Need DOJ to get permission from the Courts to do intrusive work instead of a right of entry agreement
- Non-Intrusive Technical Memorandum approved Army, EPA & NJDEP:
 - Added approved process to Work Plan Addendum
 - Information from other activities included in Work Plan
 - Transects spaced 100 feet
- If Data Quality Objectives cannot be met, a Data Gap FS will be developed with another contract
- Work to begin soon



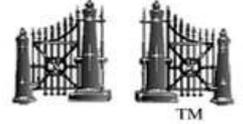
Map showing agreements of approved Supplemental Work Plan





Programmatic Developments

US Army Garrison



Picatinny Arsenal

- Community Involvement Plan revised and approved
- Classified Exemption Area Report approved
- 2013 Installation Action Plan being drafted
 - Reflects that No-Action is expected for over 100 sites with acceptable risk
- FY 14 plan will include a major performance-based contracting effort
 - FSs and Remedy-in-place for MMRP and Former Skeet Range, Remedy-in-Place 600 Hill GW and Lakes to be contracted out till Remedy in Place
 - Replacement of current PBC contract with LTM requirements